Serial No.: 10/686,508   Filed: 10/14/2003
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Amendments to the Specification:

Please replace paragraph [0001] with the following amended paragraph:

[0001]   This invention is related to commonly assigned and co-pending United
States Serial Number ~~10/~~ 10/686,034 (Attorney Docket Number GP-
304194.

Please replace paragraph [0046] with the following amended paragraph:

[0046]   While any variety of rearrangement or transformation of the variables
may be accomplished in accordance with a particular usage or reference objective,
a presently preferred arrangement for storage is one which is efficiently indexable by
certain uncontrolled or indirectly controlled ones of the parameters of the powertrain
which serve as independent variables in their own right in a preferred control for the
powertrain. In accordance with such a preferred control, No and To are utilized as
independent variables in the determination of preferred operating points for the input
torque and speed which will allow for torque command generation for the engine
and speed control of the transmission via transmission electric motor torque control.
Such torque commanded operation of the engine is generally well known in the
arena of torque based engine controls and is not further detailed herein. An
exemplary speed control for a hybrid transmission is described in detail in commonly
assigned and co-pending United States Serial Number ~~10/~~ 10/686,511
(Attorney Docket Number GP-304140) which is incorporated herein by reference.
Hence, a logical and preferred rearrangement or transformation of the variable is
better visualized with reference to the bottom portion 112 of FIG. 4 wherein the
independent variables are in a first set of columns labeled "inputs" and the
dependent variables are in a second set of columns labeled "outputs."

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Please replace paragraph [0051] with the following amended paragraph:

[0051] The process at 105 iterates through the values of To in the region of interest and motor power and aggregate motor and power electronics losses are mapped in the Ni/Ti region. Motor power is determined in accordance with EVT torque and speed models derived from Newtonian based physical modeling for rotating bodies (e.g. free body diagrams) for the various modes of the EVT. The matrix equations for motor torque are derived and placed into the following form for calculation of Ta and Tb from Ti and To for the present iteration in No/To:

$$\begin{bmatrix} Ta \\ Tb \end{bmatrix} = \begin{bmatrix} K_{11} & K_{12} \\ K_{21} & K_{22} \end{bmatrix} \begin{bmatrix} Ti \\ To \end{bmatrix}$$

where Ta is motor A torque,

Tb is motor B torque,

Ti is EVT input torque,

To is EVT output torque, and

Kn are system constants including reflected gear ratios and inertias.

$$\begin{bmatrix} Na \\ Nb \end{bmatrix} = \begin{bmatrix} K_{11} & K_{12} \\ K_{21} & K_{22} \end{bmatrix} \begin{bmatrix} Ni \\ No \end{bmatrix}$$

Likewise, the matrix equations for motor speeds are derived and placed into the following form for calculation of Na and Nb from Ni and No for the present iteration in No/To:

where Na is motor A speed,

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Nb is motor B speed,

Ni is EVT ~~inout~~ input speed,

No is EVT output speed, and

Kn are system constants including reflected gear ratios.

From the matrix equations generating torques and speed, motor power is derived as follows:

Pmotor_A = Ta*Na, and

Pmotor_B = Tb*Nb

Motor power, Pmotor_A and Pmotor_B, are mapped in the Ni/Ti region for the present iteration in No/To.

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